Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously presented) A transmitter for use in optical communication system, said transmitter comprising
   a means for generating a stream of RZ optical pulses in which alternate ones of such pulses have essentially orthogonal polarizations, and
   a means for modulating the phases of said optical pulses as a function of input data applied to said transmitter thereby encoding said input data onto said stream of RZ optical pulses,
   wherein said modulating means is a Differential Phase Shift Keying (DPSK) modulator.

2. (Cancelled) The invention defined in claim 1 wherein said modulating means is a phase shift keyed (PSK) modulator.

3. (Cancelled) The invention defined in claim 1 wherein said modulating means is arranged to modulate said optical pulses in accordance with the differences between successive bits in the said input data.

4. (Previously presented) A transmitter for use in optical communication system, said transmitter comprising
   a means for generating a first and a second stream of RZ optical pulses in which pulses in said first stream have essentially orthogonal polarizations with respect to pulses in said second stream, and

means for modulating the phase of said optical pulses in said first and second streams as a function of first and second streams of input data applied to said transmitter, respectively, thereby encoding said first and second streams of RZ optical pulses,

wherein said modulating means is a Differential Phase Shift Keying (DPSK) modulator.

5. (Original) The invention defined in claim 4, wherein the said first and second stream of optical pulses each have same first wavelength, and wherein said transmitter further includes a wavelength division multiplexer for combining the output of the said modulation means with at least a second modulated optical signal having a wavelength different from said first wavelength.

6. (Original) The invention defined in claim 4, wherein said optical pulses are solitons.

7. (Previously presented) An optical communication system arranged to transmit at least one stream of input data from a transmitter to a remote receiver, said system comprising

a transmitter for generating a stream of RZ optical pulses in which alternate ones of such pulses have essentially orthogonal polarizations, and for modulating the phase of said optical pulses as a function of said input data applied to said transmitter thereby encoding said input data onto said stream of optical pulses, wherein said modulation is in a Differential Phase Shift Keying (DPSK) modulation format, and

an optical communication channel for transmitting the phase modulated optical pulses from said transmitter to said remote receiver.

8. (Original) The invention defined in claim 7 wherein said system further includes a demodulator for recovering said at least one stream of input data from said modulated optical pulses at said remote receiver.

9. (Previously presented) A method for transmitting input data using an optical communication system, said method comprising the steps of

generating a stream of RZ optical pulses in which alternate ones of such pulses have essentially orthogonal polarizations, and

modulating the phases of said optical pulses as a function of said input data thereby encoding said input data onto said stream of RZ optical pulses,

wherein said modulation is in a Differential Phase Shift Keying (DPSK) modulation format.

10. (Cancelled) The invention defined in claim 9 wherein said modulating step includes phase shift keying of said optical pulses in a PSK modulator.

11. (Cancelled) The invention defined in claim 9 wherein said modulating step includes modulating said optical pulses in accordance with the differences between successive bits in the said input data.

12. (Previously presented) A method for transmitting input data using an optical communication system, said method comprising the steps of

generating first and second streams of RZ optical pulses in which pulses in said first stream have essentially orthogonal polarizations with respect to pulses in said second stream, and

modulating the phase of said optical pulses in said first and second streams as a function of first and second streams of input data, respectively, thereby encoding said first and second streams of input data onto first and second streams of RZ optical pulses,

wherein said modulation is in a Differential Phase Shift Keying (DPSK) modulation format.

13. (Original) The method defined in claim 12, wherein said first and second streams of optical pulses each have same first wavelength, and wherein said method further includes the step of combining, in a wavelength division multiplexer, the phase modulated optical pulses generated in said modulation step with at least a second modulated optical signal having a wavelength different from said first wavelength.

14. (Original) The invention defined in claim 12 wherein the said optical pulses are solitons.

15. (Previously presented) An optical communication method for transmitting at least one stream of input data from a transmitter to a remote receiver, said method comprising steps of:

generating a stream of RZ optical pulses in which alternate ones of such pulses have essentially orthogonal polarizations, and modulating the phase of said pulses as a function of said input data applied to said transmitter thereby encoding said input data into said stream of RZ optical pulses,

wherein said modulation is in a Differential Phase Shift Keying (DPSK) modulation format, and

transmitting the modulated optical pulses from said transmitter to said remote receiver via an optical communication channel.

16. (Original) The invention defined in claim 15 wherein said method further includes demodulating said modulated pulses received at said remote receiver to recover said at least one stream of input data.